

Application No.: 10/774154

Case No.: 58561US004

Remarks

Favorable reconsideration of this application in the light of the amendments and the following discussion is respectfully requested. Claims 9 and 10 have been amended. Claims 1-10 remain pending in this application for consideration.

It was noted by the Examiner that the USPTO has not received a certified copy of priority document EP 03075848.6. The Examiner indicated that applicants need to submit it in order to claim the priority date of 3-25-2003, otherwise only US filing date of 2-6-2004 will be granted.

Applicants aver that the certified copy of the priority document for the present application was submitted with the filing of this matter. A copy of the post card submitted with the application is enclosed with this response for the Examiner's reference and review. The post card, date stamped and marked by the receiving office at the USPTO, indicates that the priority document was included with the filing of the present application. Thus applicants request that the filing date of March 25, 2003 be granted for the present application.

Objections

The disclosure was objected to because of informalities. Applicants have amended pages 18 and 22 of the specification as suggested by the Examiner. Withdrawal of the objection is respectfully requested.

Claim 1 was objected to because of informalities. The Examiner indicated that language in the abstract of the disclosure is inconsistent with the language of claim 1 that suggests that the long chain branching of the fluoropolymer is an optional feature of the present invention.

Applicants respectfully traverse the Examiner's assertion and ask for reconsideration of the claim and withdrawal of the objection. Applicants believe that the language of claim 1 specifically singled out by the Examiner is consistent with the language in the abstract of the disclosure. The language of the claim indicates that component (c) of the claim regarding comonomers is optional while the remainder of the claim is expressly directed to the fluoropolymer having long chain branches. Further, the specification expressly indicates that the fluoropolymers of the present invention are long chain branched (see page 8, line 4 through page 9, line 23). Withdrawal of the objection is respectfully requested.

Application No.: 10/774154

Case No.: 58561US004

Claim Rejections Under 35 USC § 112

Claims 9 and 10 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

According to the Examiner, Claims 9 and 10 provide for the use of a fluoropolymer as defined in Claim 1, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Additionally, Claim 9 and 10 were rejected under 35 USC 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 USC 101.

Applicants submit amended claims 9 and 10 for reconsideration. The claims have been amended and placed in a conventional method claiming format. Applicants respectfully request reconsideration of the amended claims.

Claim Rejections Under 35 USC § 102

Claims 1-2, 6-7 and 9-10 were rejected under 35 USC § 102(b) as being anticipated by Bekiarian et al (U.S. Patent 4,612,357) or Bekiarian et al (EP 0 208 305 A2), each individually.

Regarding the limitation of parent Claim 1, the Examiner averred that Bekiarian et al in both US and EP patents, disclose the preparation of melt-processible, thermoplastic tetrafluoroethylene copolymers comprising units of tetrafluoroethylene, iodo(perfluoroalkyl) ethylene and optionally a third comonomer such as $R_f\text{-CF=CF}_2$ or $R_f\text{-O-CF=CF}_2$. Bekiarian et al has further disclosed that the copolymers are melt-processible with a melt viscosity that can be measured at the processing temperature of 320-400° C. It was noted by the Examiner such a statement reads on the limitation of melting point of 100-320° C due to the fact in the art that processing temperature is always higher than melting point. The Examiner again indicated that the phrase of "said fluoropolymer having long chain branches" is found not consistent with the statement on page 26 at line 13, and that this claim limitation may be optional and thereby the Examiner treated it with no merit.

Application No.: 10/774154

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The Office Action further refers to some of the dependent claims as follows:

Regarding Claim 2, tetrafluoroethylene is specifically used as a major monomer.

Regarding Claim 6, a third comonomer such as $R_f\text{-CF=CF}_2$ or $R_f\text{-O-CF=CF}_2$ is included, thereby it includes hexafluoropropylene or a perfluorinated vinyl ether.

Regarding Claim 7, the modifier monomers are used in an amount of not more than 0.03 wt% of total weight.

Regarding Claims 9 and 10, the copolymers can be extruded into shaped articles such as wire.

Applicants' Response to the Claim Rejections Under 35 USC § 102

Applicants aver that claims 1-2, 6-7 and 9-10 are patentable under 35 USC § 102(b) over Bekiarian et al, U.S. Patent 4,612,357 or Bekiarian et al, EP 0 208 305 A2, each individually. Applicants note that the Bekiarian et al US patent is the priority document for the Bekiarian et al EP patent.

The present invention is directed to a fluoropolymer that is melt-processible and thermoplastic and that has a melting point between 100° C and 320° C. The fluoropolymer is derived from: (a) one or more gaseous fluorinated monomers; (b) one or more modifiers selected from (i) olefins having a bromine or iodine atom bonded to a carbon of the double bond of the olefin, (ii) olefins having a formula (I) of $X^a_2C=CX^a-R_f\text{-Br}$ wherein X^a is H, F, Br, Cl, or I; R_f is perfluoroalkylene, perfluorooxyalkylene or perfluoropolyether group and (iii) mixtures thereof; and (c) optionally one or more comonomers selected from non-gaseous fluorinated monomers and non-fluorinated monomers. The fluoropolymer derived from components (a), (b) and (c) has long chain branches.

The US and EP Bekiarian et al disclose fluorothermoplasts modified with iodo(perfluoroalkyl)ethylene [$I\text{-R}_f\text{-CH}_2\text{=CH}_2$]. Applicants have specifically addressed the EP Bekiarian et al in the background section of the present specification (see page 4, lines 8-16). Applicants aver that the iodo(perfluoroalkyl)ethylene of the US and EP Bekiarian et al fail to meet the limitations set forth in either element (i) or (ii) of component (b) in claim 1 or claim 7. More specifically, Bekiarian et al fail to teach, suggest or disclose the use of one or more modifiers having an olefin with a bromine or iodine atom bonded to the carbon of the double bond of the olefin or an olefin corresponding to formula (I) of claim 1 or claim 7.

Application No.: 10/774154

Case No.: 58561US004

Since neither the US or the EP bekiarian et al patents disclose either element (i) or (ii) of component (b) of claim 1 or claim 7 of the present invention, such references fail to anticipate the present invention. Reconsideration of claims 1 and 7 and the withdrawal of the rejection under 35 USC § 102 is respectfully requested.

The remaining claims 2, 6 and 9-10 all depend from either claim 1 or claim 7. Accordingly, each of these claims is patentable at least on the basis of this dependency from a patentable base claim.

Claim Rejections Under 35 USC § 103

Claims 3-5 and 8 were rejected under 35 USC § 103(a) as being unpatentable over Bekiarian et al (U.S. Patent 4,612,357) or Bekiarian et al (EP 0 208 305 A2), each individually in view of Duvalsaint et al (U.S. Patent 6,277,937 B1).

The Examiner incorporated the discussion of the disclosures of the prior art of Bekiarian et al ('357) or Bekiarian et al ('305) for Claims 1-2 and 5-10 of this office action is incorporated here by reference. Regarding Claims 3 and 4, the Examiner averred that both the Bekiarian references are silent about the preparation of such a fluorinated copolymer with an olefin having at least one bromine or iodine bonded directly to double bond. According to the Examiner Duvalsaint et al teaches that in the course of making fluorinated copolymers, bromine or iodine-containing monomers such as bromotrifluoroethylene or vinyl bromide can be included. The Examiner suggested that the advantage is such halogenated monomers can be useful as a cure site to provide crosslinking and such obtained copolymers have substantially no ionic end groups (column 5, lines 1-49; column 1, lines 16-44).

In light of the fact that Bekiarian et al ('357), Bekiarian et al ('305) and Duvalsaint all include halogenated comonomers to be useful as cure-site monomer in order to obtain curable fluoropolymers. Therefore, the Examiner concluded that one having ordinary skill in the art would find it obvious to modify Bekiarian et al ('357) or Bekiarian et al ('305)'s copolymer preparation by replacing iodo(perfluoroalkyl) ethylene with other bromine or iodine-containing monomers such as bromotrifluoroethylene or vinyl bromide as taught by Duvalsaint. By doing so, the Examiner indicated that one would expect to obtain the same curable function on fluoropolymers due to the existence of halogen atoms. Additionally, such obtained copolymers have substantially no ionic end groups.

Application No.: 10/774154

Case No.: 58561US004

Regarding Claims 5 and 8, the Examiner stated that when Bekiarian's iodo(perfluoroalkyl) ethylene is replaced by other bromine or iodine-containing monomers such as bromotrifluoroethylene, such obtained copolymers are thereby perfluorinated.

Applicants' Response to the Claim Rejections Under 35 USC § 103

Applicants aver that claims 3-5 and 8 are patentable under 35 USC § 103(a) over Bekiarian et al (U.S. Patent 4,612,357) or Bekiarian et al (EP 0 208 305 A2), each individually in view of Duvalsaint et al (U.S. Patent 6,277,937 B1).

The present invention has been distinguished over both the US and EP Bekiarian et al patents for the reasons set forth in applicants' response the rejection of claim 1 and 7 under 35 USC § 102. Claims 3-5 are further limitations on claim 1 and claim 8 is a further limitation on claim 7.

Duvalsaint et al describe amorphous fluoropolymers having copolymerized units of vinylidene fluoride, at least one other fluorinated monomer and at least one cure site monomer. The amorphous fluoropolymers, modified with e.g. Br/I cure site monomers, are transformed, or cured, into fluoroelastomers. Applicants aver that the amorphous polymers of Duvalsaint et al are not partially crystalline with melting points between 100°C to 320°C as specified in the present invention. Thus Duvalsaint et al fail to teach, suggest, or disclose fluorothermoplasts having melting points in the claimed range.

Since both Bekiarian et al and Duvalsaint et al fail to describe each and every element of the present claims, the combination of the references is inappropriate and would not result in the present invention. Bekiarian et al fail to recognize the use of the modifiers of component (b) of claims 1 and 7 with fluorothermoplasts. Duvalsaint et al is only directed to fluoroelastomers. There is no motivation in either reference to make a combination that would even result in the present invention. The Office Action fails to set forth a prima facie case of obviousness of claims 3-5 and 8 based upon Bekiarian et al and Duvalsaint et al. Withdrawal of the rejection of claims 3-5 and 8 is respectfully requested.

The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. However, Applicants note that both Albin and Moore teach, suggest, and disclose fluoroelastomers and not fluorothermoplasts as claimed in the present invention.

Application No.: 10/774154

Case No.: 58561US004

Conclusion

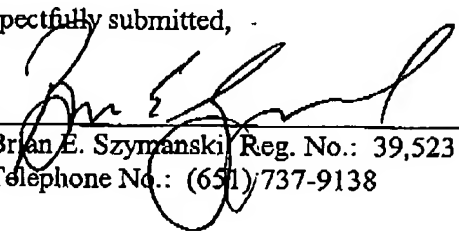
In view of the foregoing remarks, favorable reconsideration of the present application and the passing of this case to issue with all claims allowed is courteously solicited.

Should the Examiner wish to discuss any aspect of this application, applicants' attorney suggests a telephone interview in order to expedite the prosecution of the application.

Respectfully submitted,

October 12, 2004
Date

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First Named Inventor: Harald Kaspar

Case No.: 58561US004

Title: Melt-Processible Thermoplastic Fluoropolymers
Having Improved Processing Characteristics and
Method of Producing Same

Enclosures:

- ☒ Transmittal Letter
- ☒ 26 Pages of Specification (including Claims and Abstract)
- ☒ 10 No. of Claims
- ☒ 2 Sheets of Drawings
- ☒ Declaration/Power of Attorney
- ☒ Assignment with Recordation Form Cover Sheet
- ☒ Additional Documents: Certified copy of Priority Doc
EP03075848.6

Amount charged to Deposit Account: \$810.00

Attorney (initials): BES/cd

Date: February 6, 2004

Express Mail Label No.: EV 326636778 US

First Named Inventor: Harald Kaspar

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Attorney (Initials): BES/cd

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